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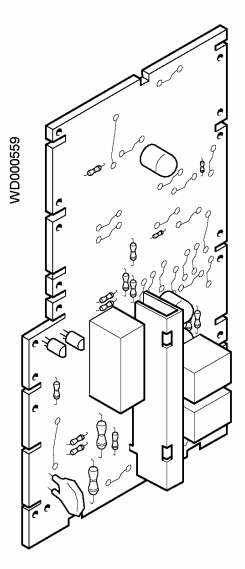
# WASHING

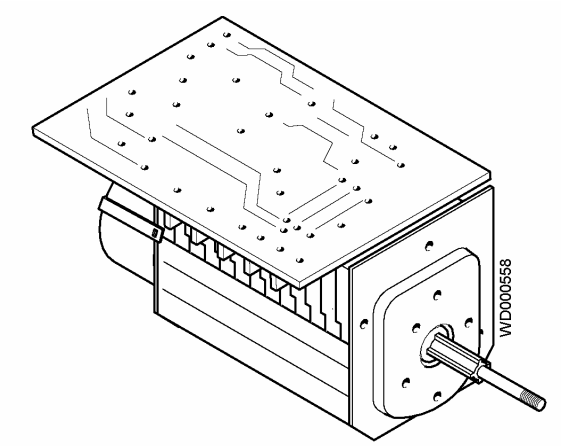
# 2520 - 2530

# SERVICE BULLETIN

## AKO VA20 – VA30J HYBRID TIMERS - TROUBLESHOOTING

The purpose of this document is to provide a clear and simple description of the steps that the service engineer must take to identify and eliminate the causes of malfunctions on appliances fitted with VA20-VA30J hybrid timers.




| Functionality | **VA20 (traditional washing)** | **VA30J (Jetsystem washing)** |
|---|---|---|
| Timer code | 124 920 00 x | 124 920 00 x |
| Timer part number | 1249200005 | 1249200005 |
| PCB part number | 124 920 11 x | 124 920 10 x |
| PCB + Casing part number | 1249283100 | 1249283001 |
| Service Manual | 599 33 49-02 | 599 33 49-01 |


| EN 2001-05-30 | Publication no. | **599 34 70-14** | Spares & Service documentation - ITZ |
|---|---|---|---|

# TESTING CYCLE

| Short test cycle - VA20 timer (traditional washing) - VA30J (Jetsystem washing) | | | |
|---|---|---|---|
| **Step** | **Step – Programme** | **Functions controlled** | **Operations performed** |
| **1** | **5 - COTTON 90°C** | Door closure, water fill to 1st level + motor movement + (circulation pump for VA30J) | Water fill to wash compartment [cold for EU version, hot for UK version] + motor movement (the type of movement depends on the function) |
| **2** | **49 - DELICATES** | Water fill to 2nd level + heating + (circulation pump for VA30J) | (Cold water fill to 1st level without motor movement), 2nd level cold water fill to wash compartment with delicate movement and heating to 40°C max. |
| **3** | **59 - DRAIN** | Drain pump | Water drain (3 min. timeout) |
| **4** | **24 – FINAL SPIN - COTTON** | (Drain)<br>Timer advance<br>Motor (spin) | Drain to pressure switch “EMPTY” (3 min. timeout) + sequence of 2 spin impulses + final cotton spin (CF: 15 min. timeout); each spin impulse is preceded by a number of low-speed reversals. |
| **5** | **26 – COTTON DRYING (washer-dryers only)** | Drying heater + condensation solenoid + drying timer + fan + (motor and drain pump) | Drying at full power for the time selected using the drying timer with motor movement and drain |

**Notes**

- Water fill to the prewash compartment is checked in the 1st step (cotton prewash)
- Water fill to the bleach compartment (if any) is checked in position 17
- Water fill to the conditioner compartment is checked in positions 22, 43 or 56
- Other faults are checked in the respective timer positions.
- Correct operation of the various functions is checked during the respective step: before replacing the board, check that the button contacts close correctly, check the value of them potentiometers and check the wiring that connects them to the board

# TROUBLESHOOTING

| Fault | Additional information | Possible causes | Actions (appliance OFF) | Replace or repair: |
|---|---|---|---|---|
| **The washing machine does not start**<br><br>*(step **1** of the test cycle)* | Pilot lamp off | No voltage to main switch | Check all the wires from the plug on the power cable to the ON/OFF switch | Power cable, wiring, suppressor |
| | | Main switch faulty / false contacts (press the button) | Check for correct closure of the contacts of the ON/OFF switch | Pushbutton |
| | Pilot lamp lit, door interlock not locked | No voltage to power terminals of timer | Check for electrical continuity between the ON/OFF switch and the corresponding timer outputs N2.2-V6.1 | Wiring |
| | | No voltage due to faulty internal bridges on timer | Check for electrical continuity between N2.2 and F10.10 and then between V6.1, D3.1, A2.1,E9.6,F10.7, F10.8, L2.1. | Timer |
| | | Door interlock faulty (contact C or PTC), or timer contact N2.1-V6.1 does not close | Use a tester to check for closure of timer contact N2.1-V6.1 | Door interlock or timer (very rarely occurs) |
| | Pilot lamp lit and door interlock locked, but solenoid valve does not perform cold water fill | Water fill solenoid faulty | Solenoid winding, water intake filter blocked | Clean the filter<br>Replace the solenoid valve |
| | | Wiring to cold water solenoid valve faulty, or timer contact faulty | Check the wiring between F10.5, F10.3 and the solenoid valve. Use a tester to check for closure of timer contact H3.1-F10.3. | Wiring or timer (very rarely occurs) |
| | Pilot lamp lit and door interlock locked, but solenoid valve does not perform hot water fill | Wiring to hot water solenoid valve faulty, or timer contact faulty | Check the wiring between F10.6, F10.4 and the solenoid valve. Use a tester to check for closure of timer contact H3.1-F10.4. | Wiring or timer (very rarely occurs) |
| **Fills water and overflows**<br>*(phases **1-2** of the test cycle)* | Pilot lamp lit and door interlock locked; the solenoid valve fills continuously | Solenoid valve (blocked) | Water fill even with WM switched off | Replace the solenoid valve |
| | | 1st level pressure switch faulty (does not switch) | Check for closure of 1st level pressure switch on “FULL” and check the relative hydraulic circuit | 1st level pressure switch |

# TROUBLESHOOTING

| Fault | Additional information | Possible causes | Actions (appliance OFF) | Replace or repair: |
|---|---|---|---|---|
| **WM fills with water, but certain functions are not correctly performed (drum rotation, heating)**<br><br>*(step **2** of test cycle)* | The heating element switches on, but the motor is not powered | Timer faulty | Check closure of contact M3.1-M3.2 | Replace the timer |
| | | Wiring / Connectors | Check the wiring for continuity between motor and PCB (K6.1÷4) | Replace or repair the wiring |
| | | Motor faulty<br>PCB faulty | Check closure of contact M3.1-M3.2 on the timer, terminals, wiring, motor windings *(see page 8)* | Replace motor and, if necessary, the PCB |
| | The heating element switches on, the motor switches on but does not perform reverse movements | PCB faulty | ---- | Replace PCB |
| | The heating element does not switch on, but the motor is powered | Heating element faulty | Check the resistance of the heating element and the continuity of the wiring | Replace the heating element / wiring |
| | | Timer faulty | Check closure of contact H3.2-H3.3 | Replace the timer |
| | | 1st level pressure switch or anti-boiling pressure switch faulty (does not switch) | Check for closure of pressure switches on “FULL” and check the relative hydraulic circuit | Replace pressure switch / repair hydraulic circuit |
| | Switches on the heating element for a moment, then skips the phase, powers the motor | NTC sensor faulty | Check if sensor is open or short-circuited (~ 25 KΩ at room temperature). | Replace NTC temperature sensor |
| | Switches on the heating element for a moment, then skips the phase and advances to the end of the programme | PCB faulty | ---- | Replace PCB |
| | Switches on the heating element for a moment, then skips the phase and passes to a programme different from the selected programme | Timer faulty (contact code C7.1÷7) | First check the connectors/wiring between the PCB (B7.1÷7) and the timer (C7.1÷7), then measure the closure of contacts C7.1÷7 (bent or interrupted) | Replace timer (and wiring, if damaged) |
| | Uncontrolled start or abnormal motor operation in all programmes | The coil of the tachimetric generator is interrupted or the PCB is faulty | Measure the coil of the tachimetric generator across motor terminals 3 and 4 (see page 8) and the wiring between the tachimetric generator and the PCB; if OK, replace the PCB | Replace the tachimetric generator or motor /PCB |
| | Abnormal operation of motor in all programmes (unusual noises, smoke, uncontrolled starting) | Coil of tachimetric generator faulty or rotor winding on motor interrupted, PCB faulty | This fault is difficult to measure; if possible, the motor should be replaced | Replace the motor and, if necessary, the PCB |

# TROUBLESHOOTING

| Fault | Additional information | Possible causes | Actions (appliance OFF) | Replace or repair: |
|---|---|---|---|---|
| **Water fills, but no circulation (VA30J only)** *(step 2 of test cycle)* | The motor and the heating element switch on, but the circulation pump remains off | Circulation pump faulty, foreign bodies or kinks in hydraulic circuit | Check the winding and check for foreign bodies or obstructions | Repair hydraulic circuit<br>Replace circulation pump |
| | | Timer contact faulty / wiring faulty | Check closure of timer contacts A2.2-V6.4, A2.2-V6.3 (depending on washing phase) or the wiring | Replace the wiring<br>Replace the timer (very rare) |
| **Heating temperature incorrect**<br><br>(test on 40°C delicates cycle - *step 2* -<br>In models with a temperature selector, first set to 30°C then, when this temperature is reached, turn the selector to "cold" | The motor and the heating element switch on, but the heating phase lasts too long (temperature in tub too high) | NTC temperature sensor faulty | Check whether open or short-circuited (~ 25 KΩ at room temperature). | Replace NTC sensor |
| | | PCB faulty | Before replacing the PCB, check for correct advance of timer motor during spin cycle (4) | Replace the PCB |
| | The motor and the heating element switch on, but the heating phase lasts too long (the water boils) | Timer faulty (timer motor blocked) | Before replacing, check for correct advance of timer motor during spin cycle (4) | Replace the timer |
| | The heating element switches on, but does not reach the required temperature and advances | Timer faulty (contact code C7.1÷7) | First check the connectors/wiring between the PCB (B7.1÷7) and the timer (C7.1÷7), then measure the closure of contacts C7.1÷7 (bent or interrupted) | Replace timer (and wiring, if damaged) |
| | | NTC temperature sensor faulty | Check whether open or short-circuited (~ 25 KΩ at room temperature). | Replace the NTC temperature sensor (occurs rarely) |
| | | Temperature selector faulty | Check the resistance of the potentiometer (0÷10KΩ) | Replace the temperature selector |
| **2nd LEVEL INCORRECT** *(step 2 of test cycle)* | Does not fill to 2nd level | 2nd level pressure switch faulty (contact open) or wiring faulty | Check that pressure switch closes on "EMPTY" and check the relative hydraulic circuit | Repair pressure switch circuit<br>Replace pressure switch/wiring |
| | It fills after the 2nd level | 2nd level pressure switch faulty (contact closed) or wiring faulty | Check that pressure switch closes on "FULL" and check the relative hydraulic circuit | Repair pressure switch circuit<br>Replace pressure switch/wiring |

## TROUBLESHOOTING

| Fault | Additional information | Possible causes | Actions (appliance OFF) | Replace or repair: |
|---|---|---|---|---|
| **Does not drain** *(step **3** of test cycle)* | Does not drain | Drain hose incorrectly positioned | Check for correct positioning/extensions of drain hose | Adjust the drain circuit |
| | | Drain filter clogged | --- | Clean the drain filter |
| | | Drain pump interrupted or blocked | Check the winding and check for foreign bodies | If necessary, replace the drain pump |
| | | Timer/wiring faulty | Check the wiring between the drain pump and the timer (F10.7, F10.9); check the closure of timer contact F10.9-V6.2 | Replace/repair the wiring<br>Replace the timer (occurs rarely) |
| | The timer remains blocked in the drain phase | Timer faulty | Before replacing, check for correct advance of timer motor during spin cycle (4) | Replace the timer |
| **Does not spin** *(step **4** of test cycle)* | Performs a few distribution ramps, then goes to STOP | With washing: intervention of anti-unbalancing device | ---- | Advise the user how to load the washing correctly |
| | | Without washing: PCB faulty | ---- | Replace the PCB |
| | Performs low-speed reversals only, waits for the correct time, then advances to STOP | Contacts faulty / wiring or PCB faulty | First check the wiring, connectors and terminals on the motor, then check the PCB | Replace the PCB |
| | Performs the first part of the spin cycle, but not the final part (does not increase speed, and stops) | Timer mid-range contact faulty | Check closure of timer contact M3.1-M3.3 | Replace the timer |
| | | Wiring / connectors /motor terminals faulty | First, check closure of timer contact M3.1-M3.3, then wiring / connectors / motor terminals | Replace or repair the wiring<br>Replace the motor |

***Washer-dryers only***

# TROUBLESHOOTING

***Washer-dryers only:***

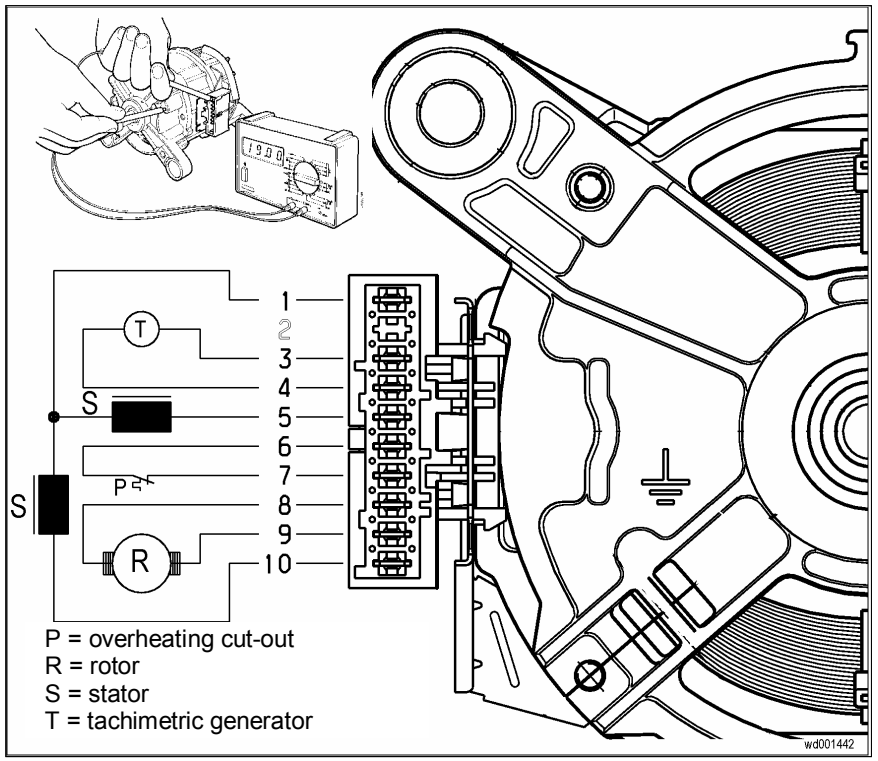
| Fault | Additional information | Possible causes | Actions (appliance OFF) | Replace or repair: |
|---|---|---|---|---|
| **Drying**<br><br>*(step **5** of test cycle)*<br><br>Before starting, select any drying temperature | Timer advances to STOP | Drying timer contact open / wiring to drying timer open | Check wiring / connectors, then check closure of drying timer contacts | Repair or replace the wiring<br>Replace the drying timer |
| | The drying timer does not advance (blocked) | Drying timer assembled incorrectly on control panel or blocked during advance | Check for correct installation of drying timer and check that there is no friction between the knob and the control panel | Install correctly.<br>If OK, replace the drying timer. |
| | Does not dry (with wet washing) – pilot lamp off | Timer contact faulty / wiring | Check closure of timer contact D3.3-H3.1 | Replace the timer |
| | Does not dry (with wet washing) – pilot lamp lit | Drying timer contacts faulty / wiring or thermostats or drying heater interrupted | Check the heating element and the thermostats (see circuit diagram) | If OK, replace the drying timer |
| | The washing remains damp | Thermostats do not function correctly or branch of heating element interrupted | Check the heating element and the thermostats (see circuit diagram) | Replace the faulty component |
| | | Duct / drying condenser obstructed | --- | Replace duct / condenser |
| | | Fan inoperative | Check the fan motor (winding may be interrupted), the fan belt and the fan blade. | Replace the motor or fan or belt |

## Checking the commutator motor

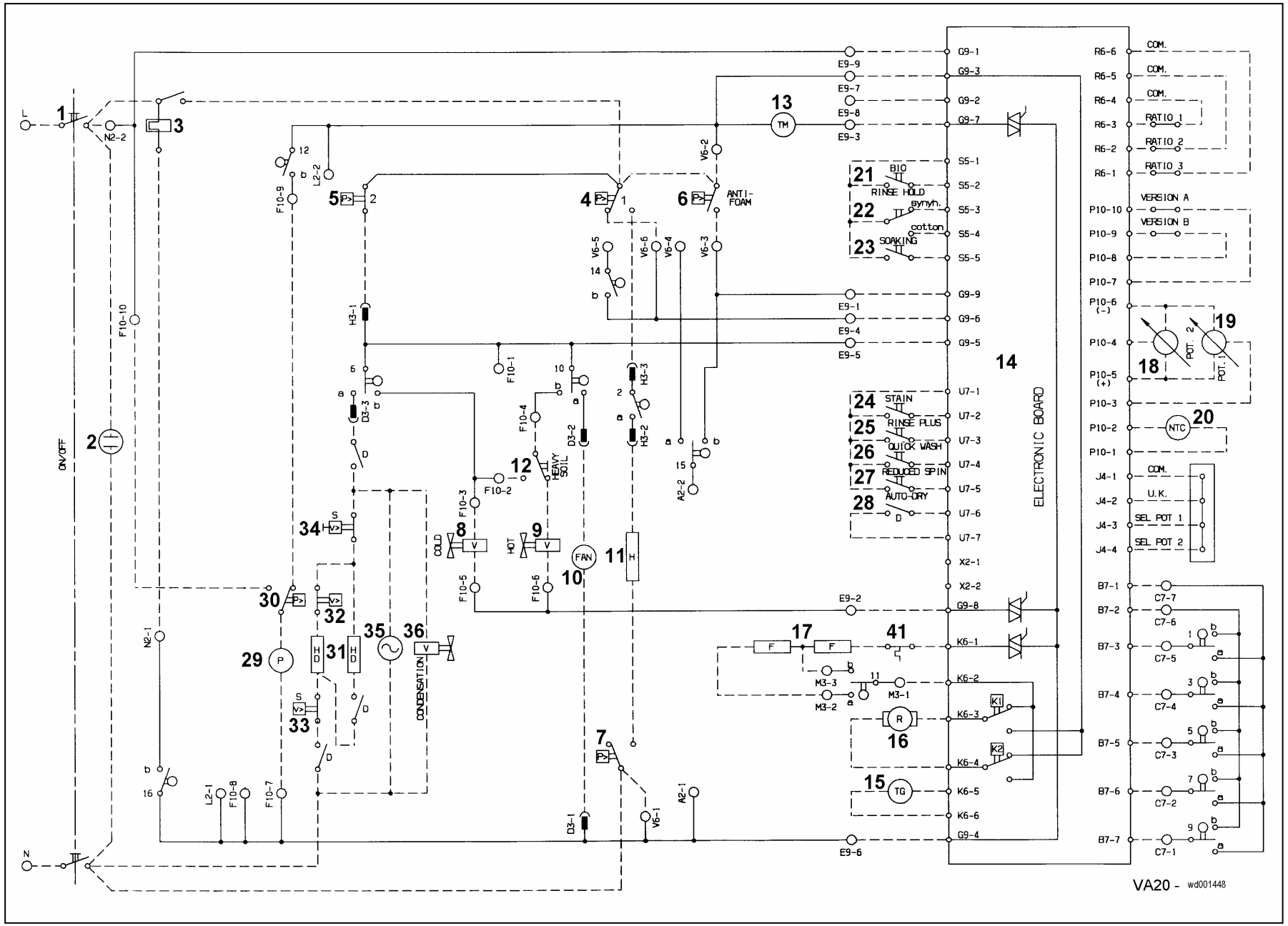
1) Check the connector blocks (wiring) and check for detached or bent terminals.
2) Check for the presence of traces / residue / build-up of water or detergent, and identify the source.
3) Use a tester with a minimum scale of 40 Mohm across each of the terminals and the casing to check for windings or other components that are connected to mass or poorly earthed (read ∞).
4) Check that each of the windings is as shown in the table below:

| Motor terminals | Check: | SOLE motor [ Ohms ] | F.H.P. motor [ Ohms ] | CE.SE.T. motor [ Ohms ] |
|---|---|---|---|---|
| **3 ÷ 4** | Winding of tachimetric generator | 171 ÷ 196<br>469 ÷ 540 | 126 ÷ 147 | 64 ÷ 73 |
| **5 ÷ 10** | Stator winding (full range) | 1.0 ÷ 2.2 | 1.0 ÷ 3.0 | 1.0 ÷ 2.0 |
| **6 ÷ 7** | Overheating cut-off | 0 | 0 | 0 |
| **8 ÷ 9** | Rotor winding | 1.5 ÷ 3.0 | 1.5 ÷ 3.0 | 1.5 ÷ 3.0 |
| **1 ÷ 10** | Stator winding (half range, presence of terminal 1) | 0.5 ÷ 1.0 | 0.5 ÷ 1.5 | 0.5 ÷ 1.0 |

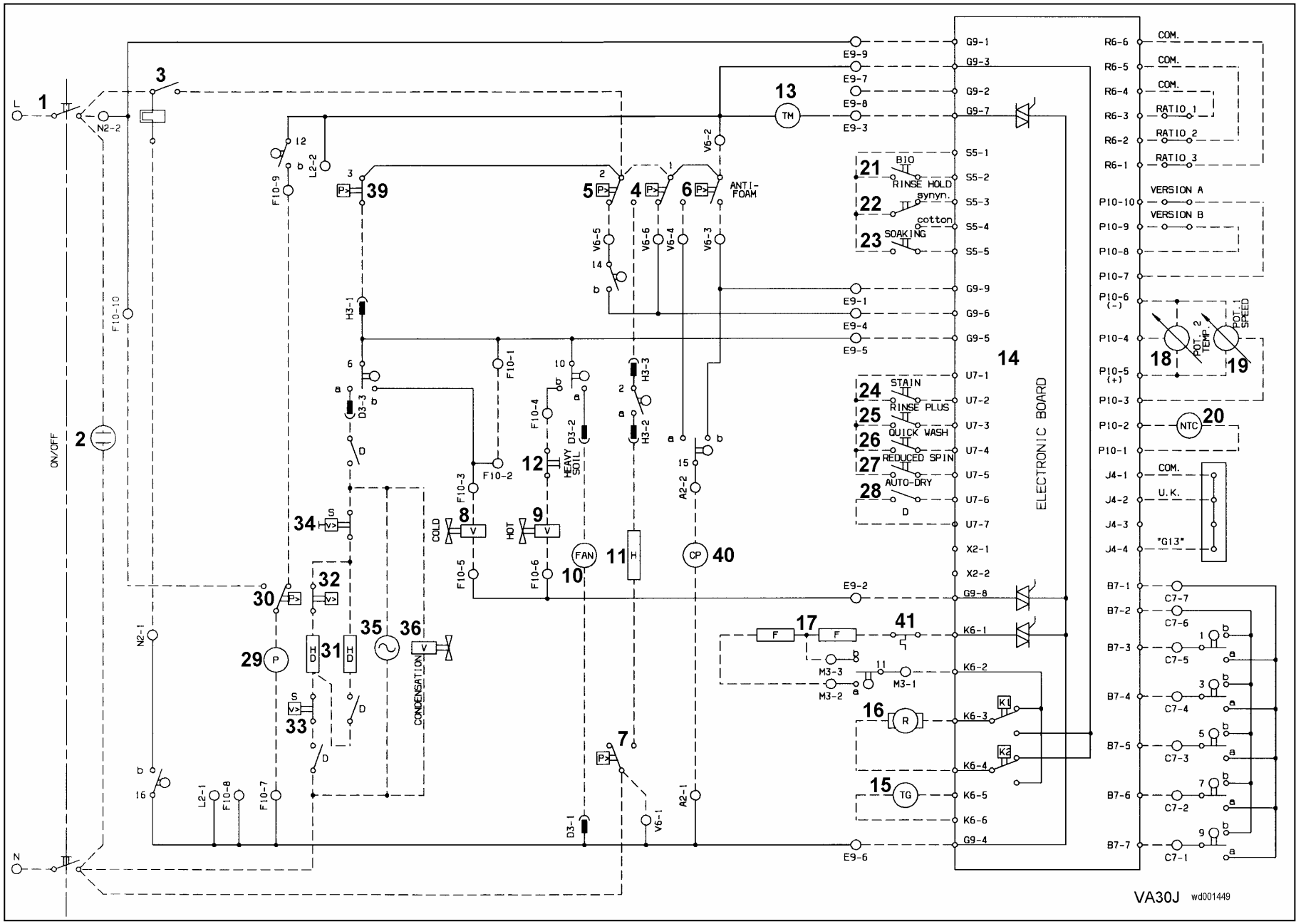
N.B.: When checking the rotor winding, the measurement should be taken around the entire perimeter, turning the shaft very slowly and checking for the presence of short-circuits between the visible plates. Check the brushes for wear.



# BASIC CIRCUIT DIAGRAM – VA20 TIMER *(refer to the specific diagram for each model)*



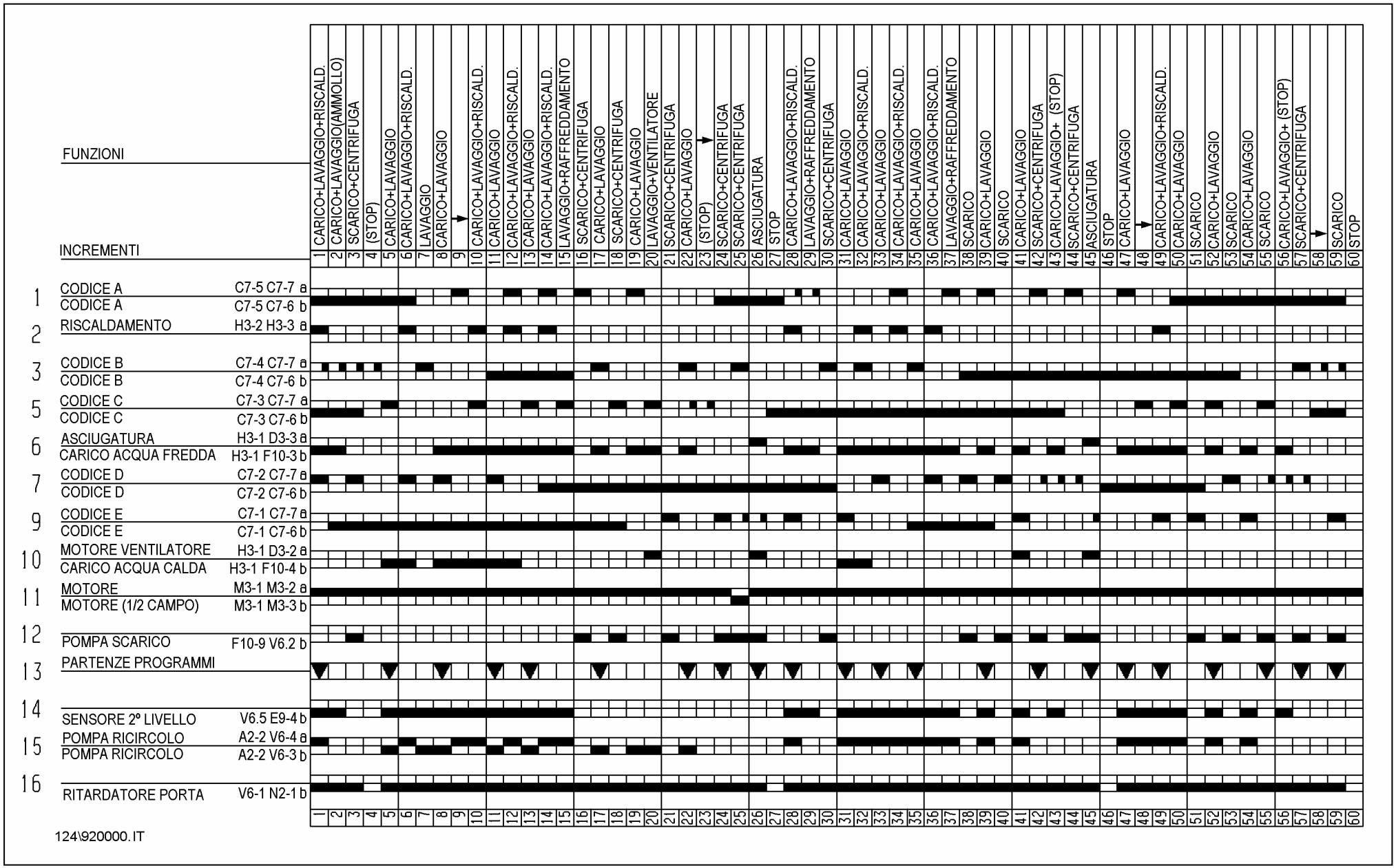
## BASIC CIRCUIT DIAGRAM – VA30J TIMER *(refer to the specific diagram for each model)*



# DIAGRAM LEGEND

| | |
|---|---|
| 1. ON/OFF button | 22. Rinse hold button |
| 2. Pilot lamp | 23. Soak button |
| 3. Door lock | 24. Stains button |
| 4. 1st level pressure switch | 25. Super-rinse button |
| 5. 2nd level pressure switch | 26. Short cycle button |
| 6. Anti-foam pressure switch | 27. Reduced spin speed button |
| 7. Anti-boiling pressure switch | 28. Automatic drying (washer-dryers only) |
| 8. Cold water solenoid valve | 29. Drain pump |
| 9. Hot water solenoid valve | 30. Anti-overflow pressure switch |
| 10. Fan motor (washer-dryers only) | 31. Drying heater (washer-dryers only) |
| 11. Heating element (washing) | 32. Drying thermostat (washer-dryers only) |
| 12. Heavy soiling button | 33. Safety thermostat (washer-dryers only) |
| 13. Timer motor | 34. Manual-reset safety thermostat (washer-dryers only) |
| 14. PCB | 35. Drying timer motor (washer-dryers only) |
| 15. Motor tachimetric generator | 36. Condensation solenoid valve (washer-dryers only) |
| 16. Rotor (motor) | 37. |
| 17. Stator (motor) | 38. |
| 18. Potentiometer 2 (temperature regulation) | 39. 3rd level pressure switch |
| 19. Potentiometer 1 (spin speed reduction) | 40. Circulation pump (VA30J only) |
| 20. NTC temperature sensor | 41. Overheating cut-out on motor |
| 21. BIO button | |

# VA20-VA30J TIMERS – FUNCTIONAL DIAGRAM

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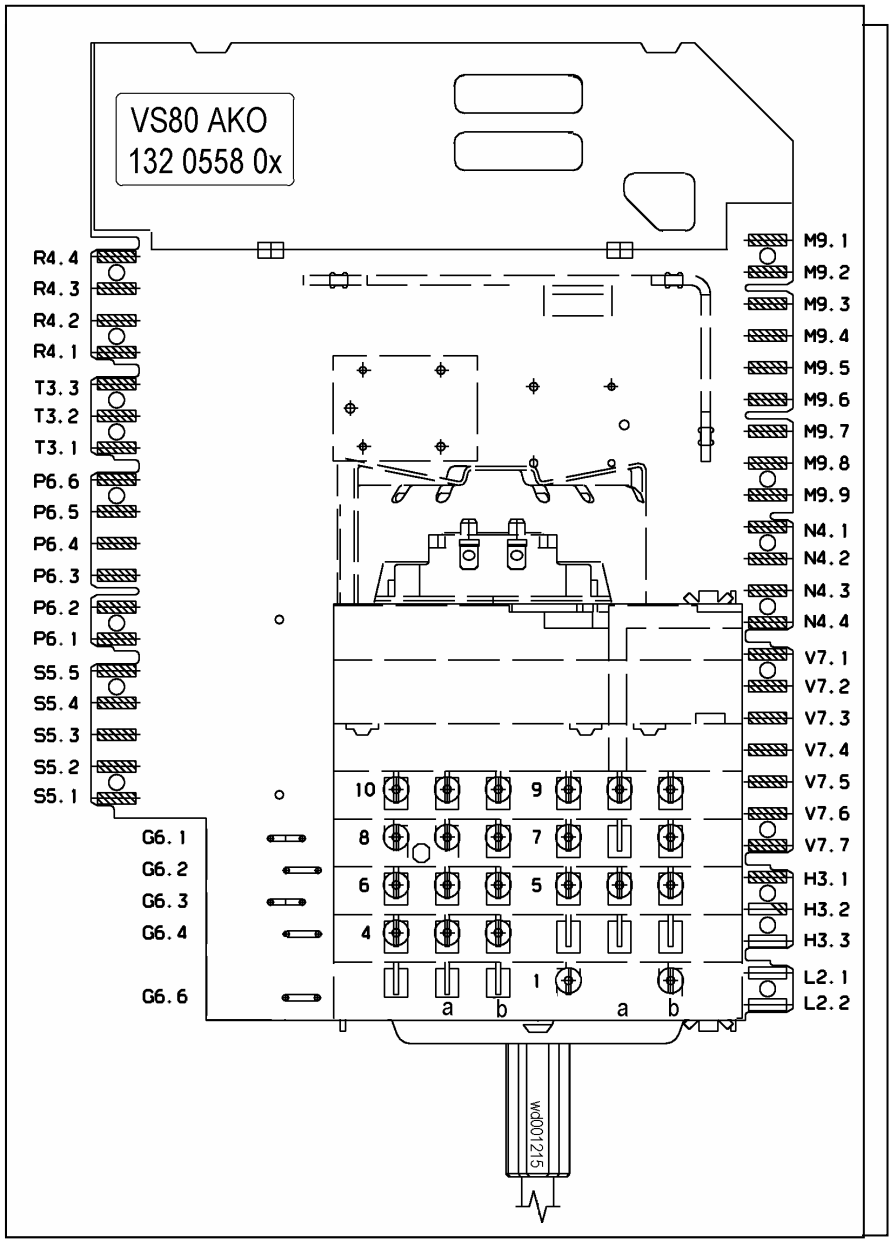
## Timer connectors *(detach all connectors before measuring the contacts)*

### BURNS ON THE TIMER

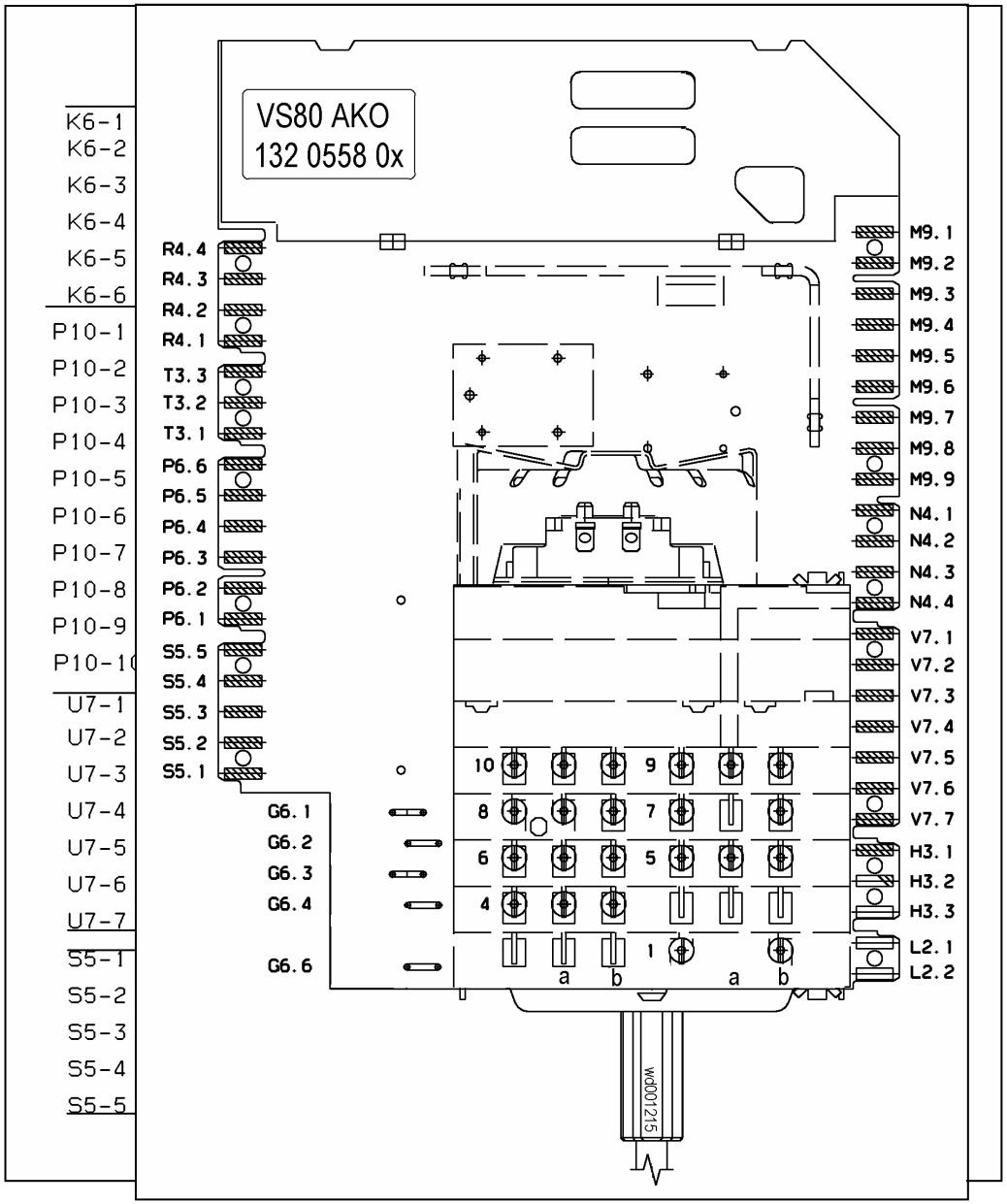
In case of burning of the printed circuit of the timer, check that the problem is not caused by another electrical component (short circuits, poor insulation, water leakage etc.). Identify the timer connector that is connected to the burnt-out track and check the wiring that powers the component.

**Problems reported in the field**

| Track burnt | Component affected |
|---|---|
| from D3-2 to 10a | Fan motor |
| from F10-9 to 12b | Drain motor |
| from N2-1 to 16b | Door lock |
| from D3-3 to 6a | Drying heater |
| from A2-2 to 15, from V6.3 to 15b, from V6-4 to 15a | Circulation pump |



## Connectors on PCB




## BURNS ON THE ELECTRONIC BOARD

In case of burning of the printed circuit of the electronic board, check that the problem is not caused by another electrical component (short circuits, poor insulation, water leakage etc.).
Identify the timer connector that is connected to the burnt-out track and check the wiring that powers the component.

**Problems reported in the field**

| Track burnt | Component affected |
|---|---|
| Track connected to connector K6-1÷6 | Commutator motor |

# Models currently produced at Porcia (Italy) VA20 functions

| | | |
|---|---|---|
| 91463050400 | WDS1092 | Zanussi |
| 91463452000 | LS3000 | Corbero |
| 91463452001 | LS3000 | Corbero |
| 91463452200 | RLA48 | Rex |
| 91463452400 | WDS1072C | Zanussi |
| 91465100400 | WDS1072 | Zanussi |
| 91465250300 | AW1037S | Arthur Martin Elux |
| 91465250300 | AW1037S | Arthur Martin Elux |
| 91465250400 | AW1257S | Arthur Martin Elux |
| 91465250400 | AW1257S | Arthur Martin Elux |
| 91465450900 | EW1062W | Electrolux |
| 91465451200 | LFD1053 | Faure |
| 91465451300 | EW1000W | Electrolux |
| 91465451400 | EW1062W | Electrolux |
| 91465451500 | KT2027 | Elektro Helios |
| 91466200300 | AW1466S | Arthur Martin Elux |
| 91466200300 | AW1466S | Arthur Martin Elux |
| 91467400500 | AW1085S | Arthur Martin Elux |
| 91467400500 | AW1085S | Arthur Martin Elux |
| 91467400700 | EW1200I | Electrolux |
| 91467400701 | EW1200I | Electrolux |
| 91467400900 | WBD1211 | BRANDT |
| 91477658800 | FLS872V | Zanussi |
| 91477658900 | FLS1276 | Zanussi |
| 91478054900 | FLS1383W | Zanussi |
| 91478055000 | FLS1084 | Zanussi |
| 91478055000 | FLS1084 | Zanussi |
| 91478055001 | FLS1084 | Zanussi |
| 91478055100 | FLS1284 | Zanussi |
| 91478055100 | FLS1284 | Zanussi |
| 91478055101 | FLS1284 | Zanussi |
| 91478055200 | FLS1286 | Zanussi |
| 91478055200 | FLS1286 | Zanussi |
| 91478055201 | FLS1286 | Zanussi |
| 91478055300 | FLS1086 | Zanussi |
| 91478055300 | FLS1086 | Zanussi |
| 91478055301 | FLS1086 | Zanussi |
| 91478055400 | FLF1212 | Zanussi |
| 91478055400 | FLF1212 | Zanussi |
| 91478055401 | FLF1212 | Zanussi |
| 91478055500 | FLF1214 | Zanussi |
| 91478055501 | FLF1214 | Zanussi |
| 91478055600 | FLS1186W | Zanussi |
| 91478055700 | FLS1386W | Zanussi |
| 91478055800 | FLS1084 | Zanussi |
| 91478055900 | FLS1284 | Zanussi |
| 91478056000 | TF1028 | Elektro Helios |
| 91478056100 | TF1228 | Elektro Helios |
| 91478056400 | FLS1486 | Zanussi |
| 91478056600 | W2010 | Atlas |
| 91478056601 | W2010 | Atlas |
| 91478056700 | W2020 | Atlas |
| 91478056701 | W2020 | Atlas |
| 91478056800 | W2040 | Atlas |
| 91478056900 | CMF7000VISION | Marynen |
| 91478056901 | CMF7000 | Marynen |
| 91478056902 | CMF7000 | Marynen |
| 91478057000 | CMF7200VISION | Marynen |
| 91478057001 | CMF7200 | Marynen |
| 91478057002 | CMF7200 | Marynen |
| 91478057100 | CMF7400VISION | Marynen |
| 91478057101 | CMF7400 | Marynen |
| 91478057102 | CMF7400 | Marynen |
| 91478057200 | TF1029 | Elektro Helios |
| 91478057300 | TF1039 | Elektro Helios |
| 91478057400 | TF1229 | Elektro Helios |
| 91478058300 | FLS1484 | Zanussi |
| 91478058500 | FLS1074HC | Zanussi |
| 91478058600 | FLS1021HC | Zanussi |
| 91478058700 | FLS1292 | Zanussi |
| 91478059400 | F1406 | Zanussi |
| 91478967800 | AW1253W | Tricity Bendix |
| 91479052100 | 193.268 0/8400 | Privileg |
| 91479100000 | TF1439 | Elektro Helios |
| 91479100002 | TF1439 | Elektro Helios |
| 91479100100 | WM1000A | Electrolux |
| 91479100200 | WM1200A | Electrolux |
| 91479100400 | EW1470F | Electrolux |
| 91479100401 | EW1470F | Electrolux |
| 91479101600 | 607.931 3/8318 | Privileg |
| 91479101900 | 371.202 3/8334 | Privileg |
| 91479103000 | CF2466 | Zanker |
| 91479103200 | 193.268 0/8400 | Privileg |
| 91479103800 | 338.377 5/8420 | Privileg |
| 91480100300 | EW878F | Electrolux |
| 91480100400 | RL102MV | Rex |
| 91482011900 | FLD884V | Zanussi |
| 91482012000 | FLD884VM | Zanussi |
| 91483400900 | CF2061 | Zanker |
| 91483400902 | CF2061 | Zanker |
| 91483401000 | CF2261 | Zanker |
| 91483401002 | CF2261 | Zanker |
| 91484152900 | 252.995 6/8417 | Privileg |
| 91484154000 | F1407 | Zanussi |
| 91484304600 | EW1250F | Electrolux |
| 91484304900 | EW1255F | Electrolux |
| 91484305000 | EW1050F | Electrolux |
| 91484305100 | QW1150H | Husqvarna |
| 91485300700 | AW967F | Arthur Martin Elux |
| 91485300700 | AW967F | Arthur Martin Elux |
| 91485300800 | AW1067F | Arthur Martin Elux |
| 91485300800 | AW1067F | Arthur Martin Elux |

# Models currently produced at Porcia (Italy) VA30J functions

| | | |
|---|---|---|
| 91465303100 | 1261TURBO | AEG |
| 91465303200 | 1261T | AEG |
| 91465303200 | LAV 1261-W | AEG |
| 91465303300 | 1261TURBOSEN. | AEG |
| 91475004100 | CLARA1045 | AEG |
| 91475900100 | 1045S | AEG |
| 91475900700 | LAVAMAT1045S | AEG |
| 91475900900 | CLARA1046 | AEG |
| 91478751900 | AW946F | Arthur Martin Elux |
| 91478751900 | AW946F | Arthur Martin Elux |
| 91478751901 | AW946F | Arthur Martin Elux |
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| 91465351000 | EW1255W | Electrolux |
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| 91467501600 | EW1250WI | Electrolux |
| 91475003900 | EW1043S | Electrolux |
| 91475003901 | EW1043S | Electrolux |
| 91475004000 | EW1062S | Electrolux |
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| 91475900500 | EW1044S | Electrolux |
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| 91478752900 | TF1038 | Elektro Helios |
| 91479751900 | TF1338 | Elektro Helios |
| 91465350900 | WDC 1200 | Hanseatic |
| 91465303400 | 024.739 5 | Privileg |
| 91465303500 | 025.025 8 | Privileg |
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| 91465351200 | 024.738 7 | Privileg |
| 91475900600 | 448.851 6/8375 | Privileg |
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| 91484803800 | 056.211 5 | Privileg |
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| 91479800400 | RLJ104 CXI | Rex |
| 91475900800 | RTF1045 | Rosenlew |
| 91475900400 | FR2051 | Zanker |
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